

Batch 61

Social Security in the United States

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Social Security is a pay-as-you-go US federal government programme that provides pensions for retirees and their surviving family members. It is a public annuity that insures against longevity and stock market risks. The payroll tax that finances it discourages private saving and work effort. The projected aging of the US population will strain the programme and necessitate either a reduction in benefits, an increase in payroll taxes, partial privatization, or some combination of these policy reforms, by 2030.

Social Security is a US federal government programme that provides retirement, survivors, and disability benefits for eligible workers and their dependents. It is largely a pay-as-you-go (PAYG) tax-financed system; current workers are taxed and these revenues are used to finance the old age, survivors (widows, widowers, surviving divorced spouses, surviving children, and parents of deceased qualified workers), and disability insurance payments. Health insurance for the elderly is administered separately in another federal programme called Medicare. Retirement, survivor and disability benefits are financed by Old Age, Survivors, and Disability Insurance (OASDI) taxes, and Medicare is financed by Health Insurance (HI) taxes. In addition to the Social Security Disability Insurance, there is Supplemental Security Income that pays benefits based on financial need. Health insurance for the poor, regardless of age, is called Medicaid, and this is financed jointly from general federal tax revenues and the states.

Eligibility and coverage

As of 2007, nearly 150 million US workers and their dependents are covered by this compulsory system. (Among the few workers who are exempted from Social Security are federal civilian workers hired prior to 1984, some state and local government workers, and household, agricultural, and self-employed workers whose earnings are too low.)

There are about 40 million retirees and survivors drawing benefits from the system. Eligibility for full retirement benefits typically requires working for ten years, although early retirement at age 62 is possible with reduced retirement benefits. The normal retirement age is currently 66, set to rise to 67 by the time the 1960 cohort retires with full benefits in 2027. Retirement benefits are about 40 per cent of lifetime average earnings of a median wage earner. High-wage earners get less than this average replacement rate and low-wage earners get more than 40 per cent. Up to an additional one-half of the retired worker's full benefits may be paid to a spouse if the spouse has not worked or has low earnings. Under certain conditions, a divorced spouse can also get benefits if the marriage lasted at least ten years. If there are children eligible for Social Security, each receives up to 50 per cent of full benefits, with a maximum of 150–80 per cent of a worker's own benefit payments as a family limit. (For details and the separate Disability Insurance program, see <http://www.ssa.gov>.)

The tax rate for OASDI in 2007 is 12.4 per cent, paid equally by the employer and the employee (or entirely if the individual is self-employed). There is no tax on earnings over \$90,000 in 2005 dollars, with this maximum rising every year by the national average wage index. (The HI tax rate is 2.9 per cent on all earnings.)

A private retirement fund is typically invested in a portfolio of stocks, commercial paper, and government bonds. Social Security is largely a PAYG system with current taxpayers paying for current retirees' benefits. Since the mid-1980s, Social Security has collected more in taxes than it pays in benefits. This surplus is loaned to the US Treasury in return for special-issue Treasury bonds that are used to finance other federal government expenditures. This Trust Fund stood at \$1.8 trillion at the end of 2006. Although this sum seems quite large, it is actually quite small compared with the annual OASI benefits which amounted to \$461 billion in 2006. (This sum does not include Disability Insurance payments, which amounted to \$91 billion in 2006.)

A short history of social security

In 1889, Germany became the first country to provide old-age insurance on a large scale. Designed by the Chancellor, Otto von Bismarck, the German system required mandatory participation, taxed the employer and the employee, and used government taxes to

provide retirement and disability benefits. The retirement age was 70, though it was lowered to 65 in 1916.

In the United States, the German system was viewed as a model. In 1935 The Social Security Act, which covered workers in commerce and industry, was signed by President Roosevelt. The original proposal and draft legislation, the Economic Security Act, was a three-tiered social pension programme: (a) old-age welfare payments, (b) mandatory, contributory old-age retirement programme, which evolved into what is now called Social Security, and (c) voluntary annuity sales through which the federal government would sell certificates to workers who could, upon reaching the retirement age, convert them into monthly annuities to supplement their basic compulsory retirement benefits. However, the Congress rejected this third proposal by President Roosevelt, which was the earliest attempt to allow for a private saving programme for retirement with mandatory annuitization at retirement.

Since 1935, many changes were made to the original 1935 act. In 1937, workers were required to pay two per cent of their payroll to support the Social Security system. In 1939, the programme started to cover dependents and survivors. In 1950, coverage was extended beyond commerce and industry, the tax rate was raised to three per cent and benefits were also raised. In 1956, the tax rate was raised to four per cent and disability insurance was introduced. Early retirement for women was permitted in 1956 and for men in 1961, when payroll taxes were raised to six per cent. In 1972, cost-of-living-adjustments (COLAs) were introduced, automatically indexing benefit levels to inflation, and payroll taxes were raised to 9.2 per cent. In 1977, the tax rate jumped to 9.9 per cent.

In 1983 the National Commission on Social Security Reform was formed to suggest ways to deal with the actuarial imbalance of the system. The commission proposed (a) a phased-out increase in the retirement age from 65 to 67, (b) an increase in the self-employment tax, (c) partial taxation of benefits to upper income retirees, and (d) expanding the coverage to include federal civilian and non-profit organization employees. The tax rate was raised to 10.8 per cent. The payroll tax rate was raised to 11.4 per cent in 1985 and to 12.4 per cent in 1993. In 1996 the Social Security Trustees (1996) reported that the Social Security system would start to run deficits in 2012, and

the trust funds would be exhausted by 2029. They predicted that, in order to keep the benefit levels unchanged, the tax rate would have to rise to 18 per cent.

The simple economics of social security

A simple textbook treatment will be presented here. For a more rigorous treatment of social security and overlapping generations models, the reader should see the seminal papers by Samuelson (1958) and Diamond (1965). For a recent and thorough coverage, see Ljungqvist and Sargent (2005).

Consider a simple overlapping generations model in which individuals live for two periods. Their earnings are y when young, and 0 when old. They face a social security tax $\tau > 0$ when young and receive a retirement benefit b when old. They earn interest on their saving, s , at the rate r . There is no uncertainty. The economy is assumed to have perfectly functioning credit markets that allow individuals to borrow any amount at the market rate of interest r . Population grows at the rate $n > 0$, and productivity (and hence real income) grows at the rate $g > 0$. The lifetime utility function of the individuals is given by

$$\log(c_1) + \beta \log(c_2) \tag{1}$$

where c_1 and c_2 are consumption when young and when old, respectively, and $\beta > 0$ is the subjective discount factor. The budget constraints faced by the individuals are given as

$$c_1 + s = y, \tag{2}$$

$$c_2 = (1+r)s + b. \tag{3}$$

We can write the lifetime budget constraint facing the agents in present value form

$$c_1 + \frac{c_2}{(1+r)} = y + \frac{b}{(1+r)}. \quad (4)$$

The social security system is unfunded, which requires that taxes collected from the young equal benefits given out to the retirees at each period:

$$b = (1+g)(1+n)\tau y. \quad (5)$$

The Lagrangian for the individuals' optimization problem is given by

$$L = \log(c_1) + \beta \log(c_2) + \lambda \left[y + \frac{b}{(1+r)} - c_1 - \frac{c_2}{(1+r)} \right], \quad (6)$$

where $\lambda > 0$ is the Lagrange multiplier.

The first-order conditions for maximizing the Lagrangian with respect to the choice variables c_1 and c_2 (and λ) yield optimal lifetime consumption quantities as

$$c_1 = \frac{(1+r)(1-\tau)y + b}{(1+r)(1+\beta)}, \quad \text{and} \quad (7)$$

$$c_2 = \frac{\beta(1+r)(1-\tau)y + \beta b}{(1+\beta)}. \quad (8)$$

The second-order conditions are satisfied given our choices of functional forms and parameter restrictions.

Using eqs (2), (3) and (8), we obtain the individual's private saving under social security as

$$s^{ss} = \frac{\beta(1-\tau)y - b/(1+r)}{(1+\beta)}. \quad (9)$$

In the absence of an unfunded social security system, that is, with $\tau = 0$ and $b = 0$, saving in this 'laissez-faire' world is given by

$$s^{lf} = \frac{\beta y}{(1 + \beta)}. \quad (10)$$

Equations (9) and (10) show that the introduction of an unfunded social security system reduces private saving. The productive capital stock in an economy is determined to a large extent by private saving, and therefore an unfunded social security system results in a lower capital stock and per capita consumption. (If factor prices were determined by the capital–labour ratio, then the general equilibrium effect would be to mitigate the reduction in private saving as the return to capital would rise in response to the decrease in private saving. However, the direction of the change in saving is still the same, and, in quantitative versions of the life cycle model, the magnitude of this effect is quite large. Also, if labour were endogenous, one could show that a public pension system with no linkage between contributions and benefits distorts labour supply and causes it to decline, increasing the welfare cost of social security.)

What is the impact on the individual's lifetime welfare? To address this issue, we need to compare the lifetime consumption values with and without social security. Substituting eq. (5) into eqs (7) and (8) yields

$$c_1^{ss} = \frac{(1+r)y - \tau y [(1+r) - (1+g)(1+n)]}{(1+r)(1+\beta)}, \quad (11)$$

$$c_2^{ss} = \frac{\beta(1+r)y - \beta\tau y [(1+r) - (1+g)(1+n)]}{(1+r)(1+\beta)}, \quad (12)$$

where c_1^{ss} and c_2^{ss} denote young- and old-age consumption under social security.

Imposing $\tau = 0$ and $b = 0$, and using c_1^{lf} and c_2^{lf} to denote young- and old-age consumption under laissez-faire, eqs (11) and (12) become

$$c_1^{lf} = \frac{(1+r)y}{(1+r)(1+\beta)}, \quad (13)$$

$$c_2^f = \frac{\beta(1+r)y}{(1+r)(1+\beta)}. \quad (14)$$

Given our assumptions on the parameters,

$$c_1^f > c_1^{ss} \text{ and } c_2^f > c_2^{ss} \text{ if and only if } [(1+r) - (1+g)(1+n)] > 0. \quad (15)$$

In other words, unfunded social security yields lower young- and old-age consumption to the individual if the rate of return on capital, $1+r$, exceeds the rate of growth of the economy, $(1+g)(1+n)$. Historically, the annual growth rate of the US economy has been just under three per cent on average, where as the return on capital has exceeded this amount significantly, by about two to five percentage points, depending on alternative definitions of the capital stock. (The condition presented in eq. (15) is known as the condition for dynamic efficiency. If the reverse were true, then a reduction in saving would reduce the dynamic inefficiency – or capital overaccumulation – in the economy and improve welfare by raising consumption in both periods.) In fact, reform proposals in the early 21st century to partially privatize social security aim to exploit this return differential in order to build up private retirement funds for old-age consumption.

Pros and cons of unfunded social security

As the previous section demonstrates, the most important welfare cost of an unfunded social security system is that it discourages private saving and the accumulation of capital. There are other social costs associated with a PAYG system, as well as several social benefits. In this section, these costs and benefits will be listed and the empirical evidence about their quantitative importance will be evaluated.

Welfare costs

1. Unfunded social security discourages saving. Young workers with high marginal propensities to save are taxed, and these resources are given to retirees, with low marginal propensities to save.

2. It discourages work effort since the payroll tax paid by the worker has less than perfect linkage, if any, with the retirement benefit that the worker will receive. The labour supply in the economy is adversely affected and so is the demand for labour as firms are reluctant to create new jobs.
3. It distorts the retirement decision and encourages early retirement.
4. It imposes a hardship on workers and companies that are facing borrowing and credit constraints. Removing the high payroll taxes devoted to this mandatory retirement system would bring welcome relief to a large number of households and firms.

Welfare benefits

1. Unfunded social security provides longevity insurance. If an individual lives longer than expected, an annuity that provides for old-age consumption is welfare-enhancing. (Yaari, 1965, showed that in a simple two-period overlapping generations model rational individuals without an altruistic motive would find it optimal to annuitize all their wealth. However, the annuity markets in the United States are thin. Indeed, Friedman and Warshawsky, 1990, and Mitchell et al., 1999, document that private annuities are unattractively priced in the United States and that the adverse selection problem likely contributes to the low volume of these contracts. See also Feldstein, 2005, for an excellent survey of issues surrounding social security.)
2. It provides insurance against (privately uninsurable) income shocks over the life cycle.
3. It serves as a partial substitute for a commitment device for individuals with time-inconsistent preferences.
4. It insulates the individuals to a large extent against aggregate shocks such as stock market risks.

Empirical evidence

Auerbach and Kotlikoff (1987) presented one of the earliest attempts at using a large-

scale overlapping generations framework to address fiscal policy effects in a calibrated, general equilibrium setting. In their model, social security did not have any potential benefit and it imposed a deadweight loss on the society. Hubbard and Judd (1987) introduced the longevity insurance aspect of social security, but still the negative impact of social security on saving outweighed this potential benefit. İmrohoroğlu, İmrohoroğlu and Joines (1995; 1999) consider variations of the earlier quantitative models but they arrive at the same conclusion.)

Diamond (1977) and Feldstein (1985) argue that a fraction of the population might lack the foresight to save for retirement. However, İmrohoroğlu, İmrohoroğlu and Joines (2003) use Strotz's (1956) time-inconsistent preferences to evaluate the welfare benefit of an unfunded social security system in a quantitative model that includes most of the costs and benefits of social security listed in the previous section, and find that social security is a poor commitment device and that individual's welfare is not increased unless for relatively high (and implausible) degrees of short-term discount rates. Despite the widespread quantitative evidence on the inefficiency of social security, the institution seems resistant to reform. One reason may be due to potentially large transitional costs of privatizing the system. For example, Conesa and Krueger (1999) find large transitional costs, with a majority of the currently alive population suffering welfare losses, and thus blocking any reform proposal. Fuster, İmrohoroğlu and İmrohoroğlu (2007), on the other hand, argue that these transitional costs are easily paid for by a growing economy with strong bequest motives and flexible labour markets. Cooley and Soares (1999) and Boldrin and Rustichini (2000) study the political-equilibrium considerations that allow the introduction and maintenance of an unfunded social security system. Krueger and Kuebler (2006) introduce aggregate uncertainty in the form of 'investment risk' but still find that the capital crowding-out effect dominates and social security reduces welfare.

The future of social security

Notwithstanding the economic burden of PAYG systems, as the previous section summarizes, the future holds much worse predictions for OECD countries. Without

exception, all social security programmes are facing financing difficulties, due to significant increases in longevity and the decline in fertility. Most European countries and Japan are aging very rapidly. The United States is not far behind. The ratio of the number of retirees to the number of workers, the so-called dependency ratio, was near 20 per cent in 2000, but is expected to rise to almost 50 per cent in 2060, meaning only two workers per retiree.

To get an idea of how much of a strain the aging of the US population puts on the current pension system, consider the following two findings from De Nardi, İmrohoroğlu and Sargent (1999). First, responding to a proposal to index retirement age to the increases in longevity so that the dependency ratio is held constant at the current level of 20 per cent, they calculate that the retirement age has to eventually rise to 76. Second, maintaining retirement benefits at their current levels when the population is aging (and the costs of medical services are rising) requires an increase in the Social Security payroll tax rate from its current level of about 10 per cent to an eventual 40 per cent. If a reform is not undertaken, even these high tax rates will not be enough to pay for pensions in the future.

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See also overlapping generations model of general equilibrium; retirement; social insurance; social insurance and public policy

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